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A NIGHT IN THE JUNGLE

BY

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ROCHESTER, NEW YORK

May, 2012

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ABSTRACT

The 3D short film “A Night In The Jungle” is a character animation piece that tells the very simple story of a monkey trying to enjoy a good night’s sleep in the deep of the jungle, only to be interrupted by a snoring sloth that falls near him. The project was completed using Autodesk Maya and Adobe Creative Suite.

The film is purposely dialogue-free, and has the straightforward goal of entertaining its audience with classic animated physical comedy in the vein of the MGM and Warner shorts from the golden era.

Although all of the imagery in the film is computer generated, traditional 2D techniques were used for both storyboards and art direction. One of the project’s challenges was creating 3D assets that truly captured the essence of the 2D artwork. A lot of research went into building comprehensive 3D character rigs that allowed the expressive, snappy and exaggerated animation style that was required for the film.

During post production, the focus of the rendering and compositing phase was making sure that the final frames had a rich look that differentiated them from standard out-of-the-box Maya renders. The hope was that the final look and feel of the film would help the audience immerse themselves in the story.

The following paper describes the creative and technical processes employed in the making of the film. Appendices include concept artwork, storyboards, and Autodesk Maya screen captures

INCEPTION

I grew up loving the classic Warner and MGM animated shorts. It wasn't just the absurd humor and great physical comedy, but I was also fascinated with the techniques developed by those pioneer animators. Before I even had a story, I knew I wanted to pay homage to those shorts. I felt like I needed to come up with a 3D film in which I could apply traditional animation techniques which were prevalent in those shorts such as exaggeration and squash and stretch and therefore have the audience forget they were even watching 3D elements. I wanted them to have a similar response to the one I had as a kid watching cartoon animals hit each other with anvils. I was also sure that I wanted my film to be dialogue-free, not because it would mean less work, but because I truly feel that animation magic works best when it is silent and only the physicality of the characters tells the story.

Since the early days of the art form, anthropomorphized animals have been an animation staple; they lend themselves well to the type of comedy I had in mind, so I knew I wanted to do something with them. During a trip to the zoo I saw gibbons fight each other over a piece of fruit, swinging from end to end on their cage; I also saw how the youngest kids were completely fixated on them, laughing out loud at every antic. I had found my star, I would use a monkey.

The problem then was coming up with the gag or central conflict for the film. I toyed with several ideas; for the longest time I thought about adapting a popular joke from my country that involves a dog lost in the jungle outsmarting a monkey and a panther. I even did pre-production work on that idea, but the fact that I didn't come up with the story and that the punchline depended on dialogue kept bothering me, so I scrapped that in favor of something original. I then thought about monkeys fighting each other over fruit, but that felt a little bit forced and uninspired.

I felt that in order for the central conflict to work it had to be relatable, preferably drawn from real life experience. I felt so frustrated that I was ready to go back to the joke adaptation idea. Just then my father visited me from my home country. After a big dinner (with let's say more than a cup or two of wine) my father treated us to a long night with a myriad of snoring sounds, literally keeping my whole family up for most of the night. It was right then when it hit me. That would be my conflict. My main character's sleep would be constantly interrupted by a snoring antagonist.

I started to look for another animal that would play off well against my monkey star and came across a nature documentary about sloths. In it, they showed how sloths can sometimes just fall from branches when asleep, most of the time without even waking up. The answer had landed in front of me.

All I needed then was a conclusion, this was somewhat easy for me, I knew I wanted the monkey to end the short in a worse situation than the one he started with and to me this obviously meant being in a situation not only more annoying but also life threatening. Since I had done some character design work for a panther/tiger during the previous joke adaptation route, I chose to reuse that work for my ending.

As for the setting, the first iteration of the film had the action taking place in a Zoo, but after a while I felt a jungle would be a more interesting place to show onscreen and that it would give more interesting composition possibilities than an enclosed zoo space.

I had found my film, a simple story about a monkey trying to sleep. My main objective would be to entertain and make people laugh through appealing characters and animation.

However, behind this very simple premise hid the creative task of nailing down the story and coming up with clever gags that felt fresh and led somewhere. Technically speaking, the

challenge would be to create 3D characters with appeal, and rigs that wouldn't limit animation needs.

The key to the success of this project would be to define a realistic scope that would allow the completion of the film without sacrificing the quality of the craft. I didn't want the audience to focus on bad models, shoddy renders or stiff animation, I wanted them to focus just on the effectiveness of the story and gags.

With these ingredients, as well as some rough initial character designs, it was now a matter of defining the sequences in full detail with storyboards.

STORYBOARDS

In order to minimize the guesswork in later stages of production, I wanted the storyboards to be as thorough as possible. In my film, physical gags and timing were integral to the story (or basically were the story), so I felt I needed the storyboards to define as much detail of the acting and character poses as possible. I spent a lot of time actually drawing animation keyframes in the storyboards. This meant that for a single shot I could have as many as 12 drawings in my boards.

I would later play with the timing by scanning the storyboards into the computer, essentially doing a rough 2D animation pass of my film. I started to get a sense of which gags were working and which ones weren't. I also drew many important acting poses so I could make sure they were maintained in 3D form when I got to animation.

Since the goal was also coming up with a film I could actually finish in time, I kept reworking the gags and was able to "trim the fat" from the storyboards until I found a flow that seemed to proceed from beginning to end in a natural way and that took the audience to an entertaining conclusion. There didn't seem to be any unnecessary repetition of the gags and the escalation of events felt right.

One constraint I did force onto myself was keeping the camera locked as much as possible. I wanted to keep the amount of moving camera shots to a minimum. I knew this would be beneficial in later stages of production such as animation and rendering.

Another self-imposed constraint was trying to reduce the amount of wide shots of the jungle, also for simplicity and production speed. This one was tricky because I needed to sell the location to the audience. I decided to open on a big establishing shot, then save very specific wide shots for later as reminders of the location. This also helped increase the impact of the final

“slingshot” shot, since it was the widest shot and was revealed with a whip pan after a long stretch of medium and close-up shots.

A couple more unforeseen benefits came from spending so much time on storyboards; with each frame I drew I got to know my characters more and more, which allowed me to lock down my character designs and come up with facial expression guides. I was also able to rough the compositions of each frame by sketching out which areas of the background would be covered by jungle plants and other elements; I knew this would come in very handy later during set dressing.

The information I extracted from the storyboards was truly invaluable. I now had a shot count and estimated running time. I also had character and prop inventories, and a very good idea of what it would take to create this jungle and the challenges I would face. I knew how many 3D assets had to be created, and understood the performance requirements of the characters and how comprehensive the animation rigs would need to be to reach those facial expressions and body poses.

I truly learned to appreciate the importance of storyboards. Every single decision stems from them. In an animation production, economy is very important; you need to make sure almost all of the footage you produce will end up on the screen. It is true what they say, storyboards are your film. You are editing before the film is even made. There really is no more important component of an animated film pipeline.

At this moment, the name of the game became “execute”. I decided I wouldn’t stray too much from my storyboards; that was the film, period. Since my film depended heavily on appealing characters and cartoony animation, I decided the next step after the storyboards would

be 3D character creation. I would give this task a good amount of time to make sure I could get the performances I wanted.

3D CHARACTER CREATION

For the film to succeed, my characters needed to be as appealing as possible. I didn't want reduced facial expressions or models that didn't do justice to the 2D designs. A 3D animated film is doomed when the audience focuses on a poorly made character instead of the story. I needed to hit the same exaggerated facial expressions I drew on paper, no easy feat in 3D animation.

My first step on the modeling of the monkey character was blocking out the proportions and volumes with primitive elements such as spheres and cylinders in my Maya scene. This is not unlike 2D character drawing, where you lock your proportions with circles and simple lines. After I was happy with the proportions and how the volumes looked from every camera angle I started to model the actual polygonal mesh.

I spent a lot of time researching polygonal topology flow for face and body deformations. I got several books on the subject; but some of the best references on topology came from the special features section of animated movie DVDs. These behind the scenes documentaries often have very quick shots of CG artists working on character models and rigs; I would pause these videos for that brief moment where the polygonal mesh was onscreen and detail how all the faces were connected. After looking at 3 or 4 films I identified common trends in polygonal modeling, especially around the mouth and eyes. In a good 3D model you have to be able to foresee how the polygons will contract and expand to reach the facial shapes.

Once I locked the topology I decided to focus on facial rigging first. After researching cartoony facial rigs I came up with a set up based on very small individual shapes that can be combined to reach any expression you want. For example, to get to a smile pose, instead of sculpting a single blendshape that looked like the final smile, I had separate shapes that

controlled the up and down movement of the mouth corner, as well as the puffing of the cheeks and the squinting under the eyes. I applied this principle to each region of the face: Brows, Cheeks, Nose, Mouth. The result was a very expressive facial rig that was able to hit all the main poses I defined in the storyboarding phase.

For the body rig, I went with a “broken hierarchy” rig approach, in which the animator can grab any part of the body and pose it independently from the rest of the body. For instance you could pose the hips of the character and have the chest stay put in its original location. I also equipped all the limbs and torso with stretchiness and volume preservation features, this way I would be able to hit the exaggerated poses I wanted.

For the sloth model and rig, I was able to leverage off the Storyboards. The sloth only hits a couple of poses during the film and spends most of the time lying on his stomach. As such, this was the pose I chose to model him in, with a focus on how the round shapes of his legs, back and butt worked with each other in the camera. For the rig, I knew precisely what the performance range was so I gave him a more limited facial rig than the monkey and spent most of the time polishing those big mouth open shapes for the snoring. Special shapes were added for the scene in which the monkey jumps on the sloths back, I wanted his back to feel fat and wobbly.

The tiger rigging was the easiest. Again, from the storyboards I knew the tigers only needed to lay there in the branches, so I didn’t waste any time with complicated rigging, just standard maya joint chains that allowed me to get the tigers to their poses. I gave him basic open mouth capabilities, and sculpted some simple sneer and growl blendshapes. I knew this would be more than enough to sell the final tiger snore.

Now that I had my characters I was ready to start laying out the shots.

LAYOUT & STAGING

For layout and staging I made a really bold bet. I decided I would lay out all my shots without any modeled sets, using only the main branches where the characters rested. My thinking behind this strategy was that the main branches would define the focal points of each shot; I would frame each shot, lock the cameras and later build the composition around the characters and branches with modeled plants and jungle elements during the set dressing phase.

I went through each shot of my storyboard and laid the 3D elements (characters and branches). I played with the camera until I got a composition that worked and locked it. I then matched the same poses and timing I created in the storyboards. Since I had full character rigs I could use this as a base for animation later on.

The hardest part of this stage was figuring out the spatial relationships between both characters in a way that worked for most of the shots. After a couple of shots, I came to a good general position for all the elements that could be tweaked to camera if necessary.

At the end of this stage, I had a video cinematic of my entire film with almost first pass animation. This was basically a 3D storyboard, which I used to tighten the timing and editing even more. The great thing was that I had all my shots ready to be animated, with rough timing, key poses and locked cameras. This meant that during the animation phase I only needed to open each shot and animate away.

ANIMATION

Though my film was silent, I did intend for my characters to grunt and hum, and of course there was all the snoring from the sloth. I had to make a choice, I would either pre-record all the sounds and animate to them, or animate all the mouth poses and hope I could just “dub” all the sounds and grunts on top of my final animation.

Against my better judgment, I decided not to pre-record all my character sounds (a sin in most animated productions). I knew it could give me trouble later, but I felt like a pre-recorded track would constrain my animation choices and limit my possibilities. I decided to define the timing of the snoring and grunts with visual cues and facial animation.

The work done in the layout phase gave me a great head start when I entered animation. I then wanted to approach each shot with a “speed animating” mentality. I already had the key storytelling poses, I would try to quickly add any more needed keys and breakdowns and quickly spline the curves using Maya’s tangent editing.

However, it had been a while since I had last animated and soon it was apparent that there were no shortcuts around this. I had to give animation the proper time and attention it required. With the schedule pressing on me I chose to do just one main pass over all the shots to get them to a solid, “more-than-enough-for-screening” point. If I had any time left, I would go back and polish stuff here and there.

Surprisingly, it was the slower shots, such as the monkey rolling around and yawning that I found the most challenging. The broader more comedic shots were pretty fun to animate. I loved pushing the rigs to their limits and getting them into weird extreme poses like the one of the monkey jumping on top of the sloth.

Another great thing about the storyboarding phase was that I was able to balance the amount of complicated shots with others that were nothing more than moving holds and such.

The monkey design lent itself to a lot of physicality, like jumping around and quick movements. The sloth was a little bit trickier. In those few shots in which he falls or hangs from his branch, maintaining the illusion of weight and “blobbyness” proved challenging.

I did have to go back and forth with the final editing and tweak the duration of some shots to tweak the timing of the jokes and make them work with my animation timing.

Towards the middle of the animation phase I had mastered a couple of neat tricks that I could repeat easily in various shots, such as double takes. The snoring animation became pretty easy too once I figured out what the spacing and timing of the mouth poses needed to be.

The one thing where I think I fell short was the monkey facial animation. I just didn’t have the time to give it enough visual cues for grunts and other monkey noises. I just hoped that it would all work out during sound editing.

At the end, even though it was challenging and time consuming, animation turned out to be a satisfying phase.

The next logical step in the pipeline would’ve been to dress the sets, however I felt I needed to solve an area which I was neglecting: lighting and texturing. Now that I had all my character animation complete, I decided I would put on the research hat again and figure out how exactly was I going to give these characters their final look.

LIGHTING, TEXTURING AND RENDERING

I'll be the first to admit that I have always been an illiterate when it comes to CG lighting, texturing and rendering. They were always my least favorite parts of the pipeline, and a source of headaches in many personal projects. At the beginning of this project they were almost an afterthought, I assumed that one light source and standard procedural Maya materials would be more than enough.

But the more I thought about it, the more clear it became. For this project, lighting represented a challenge. The story took place at night, but I wanted to make sure the film wasn't too dark and that the audience was capable of reading the action.

Knowing my limitations, I knew I needed to get help when it came to this part, and I was able to procure the assistance of Christos Tzeremes, an RIT student of SOFA's undergrad animation program. Christos' areas of expertise complemented mine, I liked to storyboard, model, rig, and animate characters, he liked to texture, light and render them.

After I explained to him my goals for the look of the film, he took the time to build 2 lighting rigs in Autodesk Maya, one for the monkey and another for the sloth. He also quickly put together a quick texture for the monkey.

He explained to me which materials would work best for my desired look, and also explained to me how to properly light a character in CG. Whereas I thought one light source would be enough to light a character, his light rig consisted of 8 different light sources each accomplishing a different effect. He showed me separate pictures of what each light source did to the character, explaining to me why they were there.

I found I liked so much what he was showing me that I added more tasks that I hadn't planned for. Instead of using procedural Maya materials, I decided to UV map all my assets and

manually paint all my textures. It was kind of a daunting task but I got the look and texture that I wanted from all the elements of my film.

Now that I understood the principles, I was able to adapt his 2 light rigs to every shot in my film. Since I had decided to worry about the sets later in the pipeline, I rendered only the characters, props and two main branches. I didn't know in detail what the final dressed sets would look like, but I had a very good idea of the composition from the storyboards and was able to imagine a consistent light source for all the shots. The hope here was that everything would come together in the compositing stage.

The great thing here was I took all my character renders and created temp video files which I could then use to create my final video edit.

VIDEO EDITING

This phase was really satisfying. Since I had footage of all my shots with character renders, I stopped the 3D pipeline momentarily and went into Adobe Premiere to work on the final video editing.

I spent a good amount of time in this, and made sure all the cuts and transitions were working; I even put placeholders for titles and credits.

One lesson I learned was that I need to leave enough footage in front and at the end of each shot so I have stuff to cut and transition with. In some shots I started my animation right at frame 1, which didn't give me enough room to cut or fade into. Thankfully, I was able to fix these things in premiere by cutting and pasting small clips.

I almost had my film done at this point. Next up I would go back to the 3D and build and dress the sets, render them and swap the footage in Premiere.

SETS

I didn't want to build an entire 3D jungle. Modelling and dressing an entire outdoor jungle environment was a daunting task, let alone modeling one that worked compositionally with all my shots.

Instead of modeling one set that fit all my situations, I decided to model small components which I would later combine to camera in each shot.

I modeled about 6 or 7 different tree trunks, all sharing the same leaf model which was duplicated many times to create the foliage. I also modeled a couple of hanging vines and some generic spike plants. Finally, I modeled a quick "wall of grass" that I would place in the far back to give the illusion of a dense jungle.

When it came to dressing the shots, I decided to start with the most difficult one: the wide shot that establishes the spatial relation between the monkey and the sloth. One question I was faced with was what to do with all that space behind them, I dreaded the thought of having to dress all that space with an intricate network of trees and jungle plants. So I came up with the solution of having a huge opening in the jungle with the night sky and far off mountains in the back. Technically this simplified things because I only needed to paint a static photoshop image of the sky and mountains. Artistically this worked great because it allowed me to create a "frame within a frame" effect by putting plants and jungle elements around the sky opening.

Dressing each shot became really fun, I just had to import all the separate jungle elements and duplicate them at random, filling out the spaces based on the rough compositions I defined in the storyboards. I didn't care how these elements were placed in the maya scene, it only mattered how they looked to camera.

Next up I would have to render the backgrounds and composite them with the sky image and character renders.

FINAL COMPOSITING

Now that I had all the elements, sky image, background jungle, and characters all rendered, I went into After Effects to start compositing the shots together.

Looking at the whole thing, the character renders seemed a bit dark and the background elements too bright when compared to the background sky image. I had to play with the levels and color correct this so the contrast between these layers worked.

After I had the color correction working I still felt like the frames lacked at certain punch. The elements just felt coldly superimposed, not properly blended to the background.

Christos Tzeremes stepped in and gave me a quick tip which involved duplicating my layers and playing with blur, exposure and contrast to create a very nifty “glow” effect around my characters. It reinforced the nighty look and helped me blend all the elements with the backgrounds.

After all my shots were composited and rendered it was time for sound.

SOUND

If there was an area whose difficulty I underestimated, sound was it.

Waiting until the very end to worry about my music and sound effects added a level of stress to the production that wasn't helpful.

My "dubbing" strategy for the grunts and monkey sounds wasn't as successful as I thought it would be. It took a lot of work to record my voice in a way that matched my animation organically.

Also, since I didn't do another facial animation pass on the monkey, some of the grunting sounds I recorded created a weird "popeye effect", in which the character's mouth didn't move but there were sounds coming out of him. I had to drop the most egregious sound bits to minimize this problem. If I had to do it all over again, I would take the time to at least record a scratch track at the beginning of the process and make it work with the storyboards and cinematic. I did end up with a satisfying animal sound track, but the process was more cumbersome than it needed to be.

Foley on the other hand was pretty fun to mix. I was lucky enough to find a free sound FX online repository with a great assortment of clips I was able to use in various places of the film.

At this point my composer came back with a very nice idea of matching african drum beats to the snoring of the sloth. Every time he started snoring, the drums would kick in, and then stop when the sloth stopped. This idea didn't turn out too successful for the first snores, but was very funny in later snores. The final touch was a loop of jungle ambience sounds, very low in volume just high enough so it seemed to be coming from far off. After a bit of playing with the

audio levels to make sure no sounds overpowered each other I had a full mix and was ready to bring it to Adobe Premiere and export. My film was essentially done.

CONCLUSION

Making a film that relies on gags and physical comedy as a story has some unique challenges of its own. Since that is pretty much all you are offering to your audience you have to make sure all the elements are of sound quality.

The art direction and character design has to be appealing, and fresh. And the 3D models and rigs have to honor the 2D artwork and maintain said appeal.

The animation has to make the most of the premise, and show the audience a take on the material that hasn't been done before. The acting has to be unique, original, and showcase a mastery of animation techniques.

The conclusion also has to be very strong. Even with the simplest of ideas, you want to take your audience to a place they haven't been to before. The ending needs to be satisfying.

Technically speaking, the craft of your 3D elements has to be very polished. One bad texture, rig, or stiff facial expression and the illusion is broken.

If your story is simple, with no layers or complicated metaphors you owe it to your audience to give them a piece of outmost quality that will at least entertain them, and in the case of animated gag comedy films, you have to make them laugh.

Even though the film could probably be funnier, the gags in "A Night In The Jungle" are successful for the most part. The timing is tight and the progression of events leads to a satisfying conclusion (that probably wasn't foreseen at the beginning of the short).

With the exception of sound, my pipeline strategy worked very well. I was able to focus on the most important tasks first and build around them to complete the film. And this was all possible because I spent so much time in the storyboards phase. All the answers to my questions during production could be found in the boards.

This wasn't the first short film in history to feature a gag with a character not being able to sleep, but the inspiration came from an honest place, and a lot of time was spent trying to find a fresh take for the material.

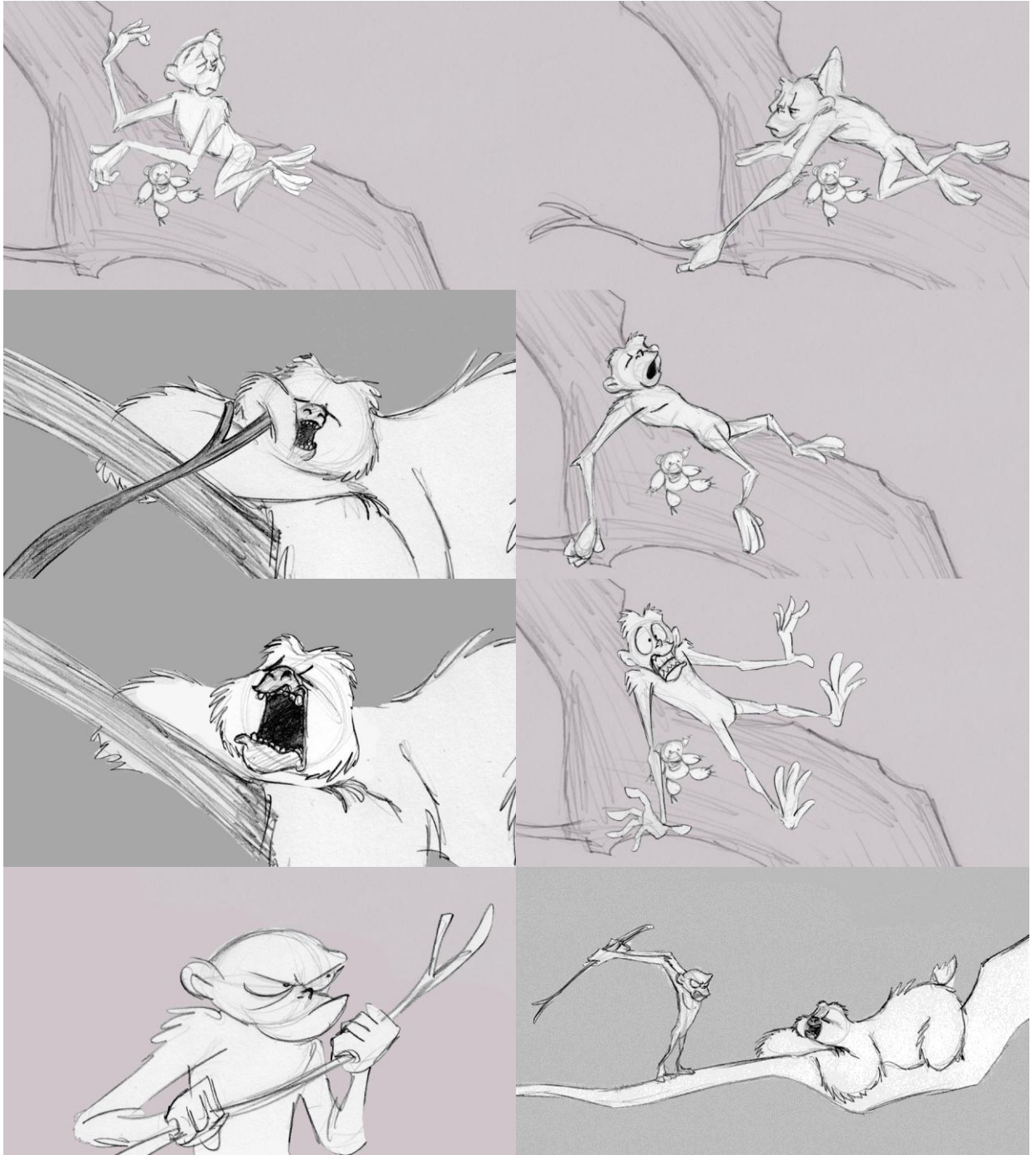
I enjoyed the experience quite a bit. During the process several more ideas for short films came to me and I look forward to starting my next project...

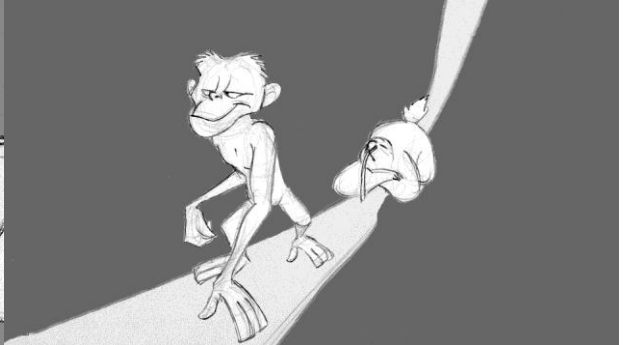
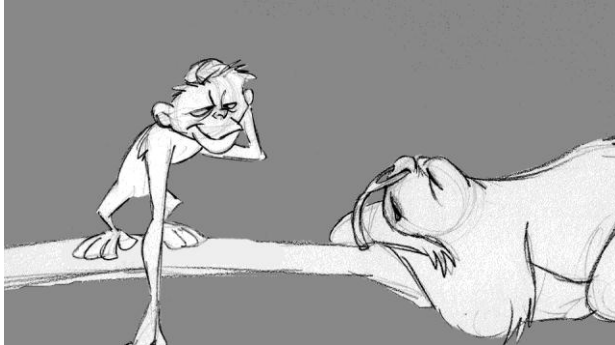
...after a long vacation of course.

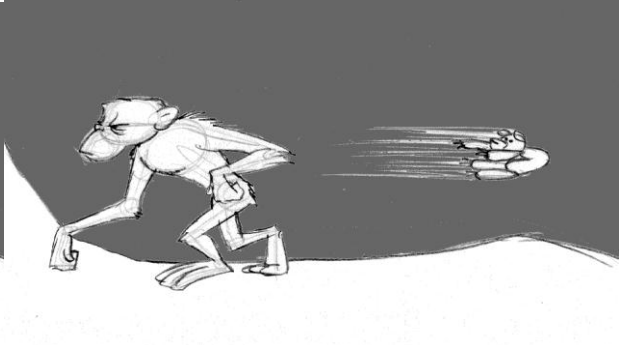
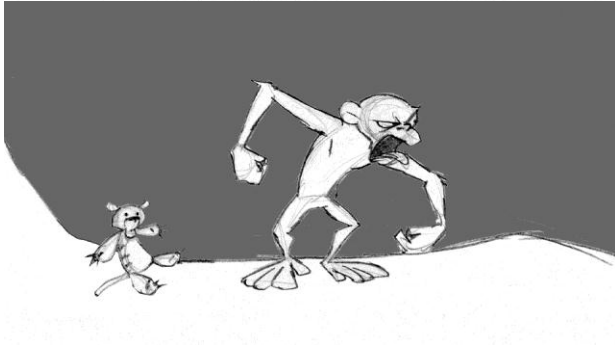
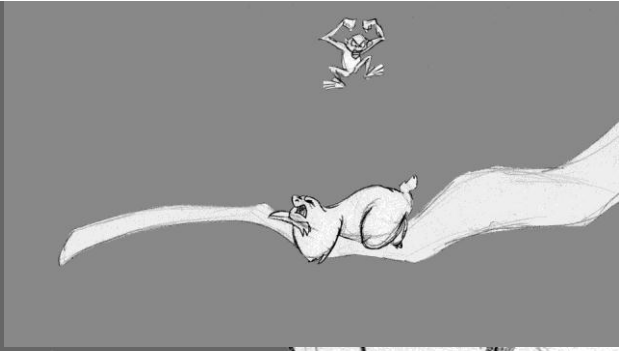
APPENDICES

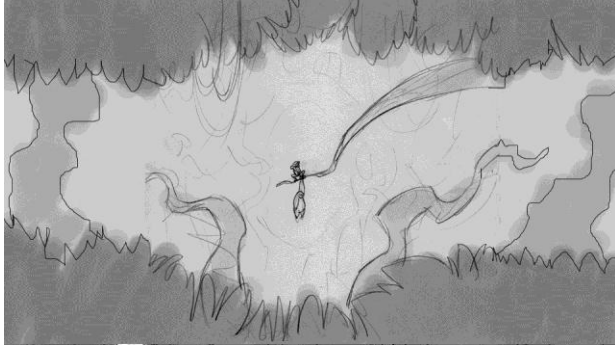
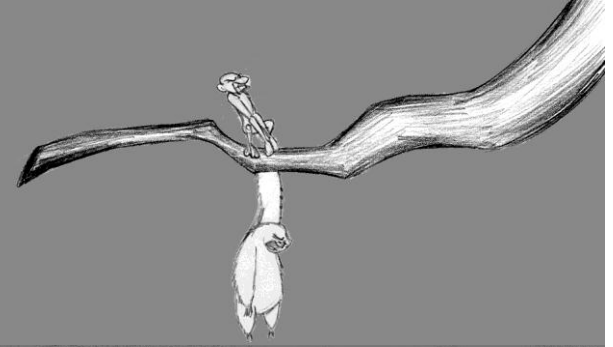
Storyboard samples:













PRODUCTION STILLS



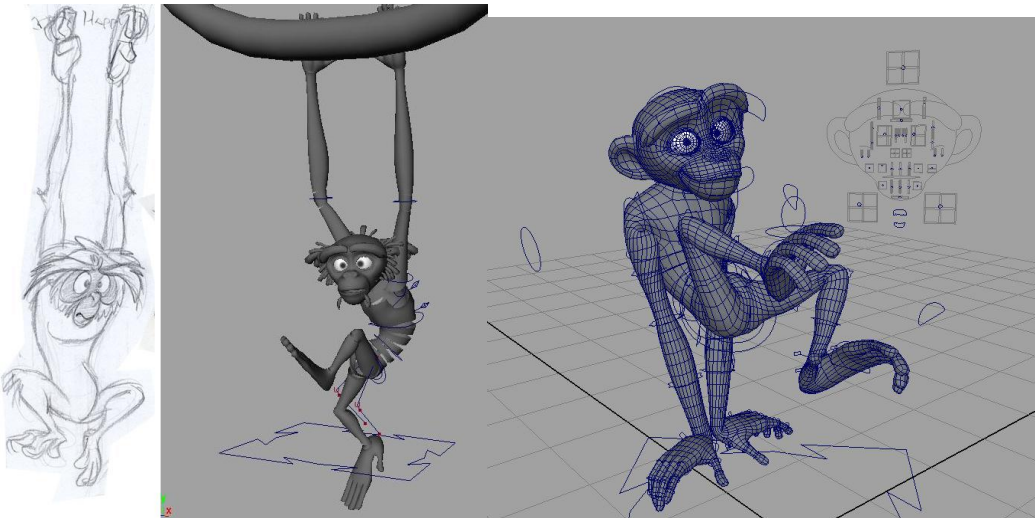


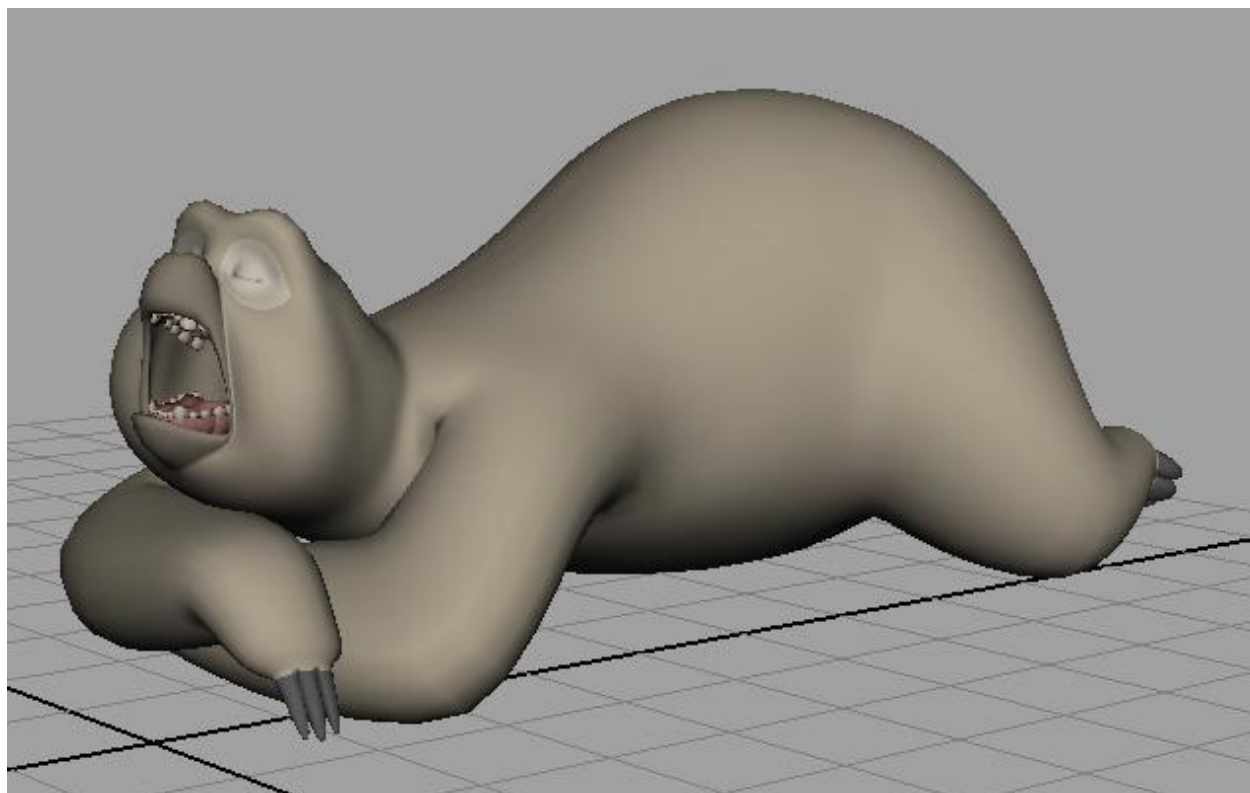




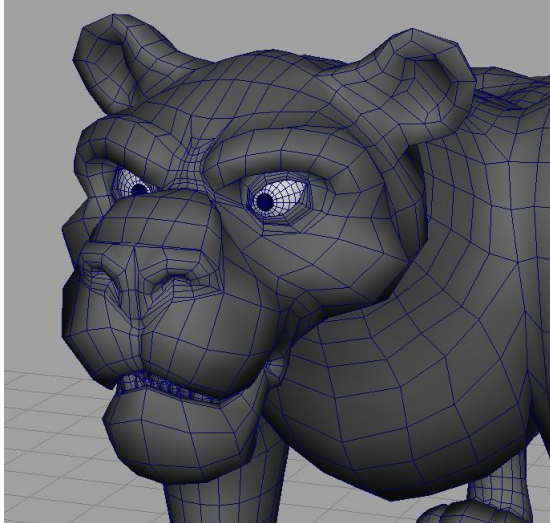
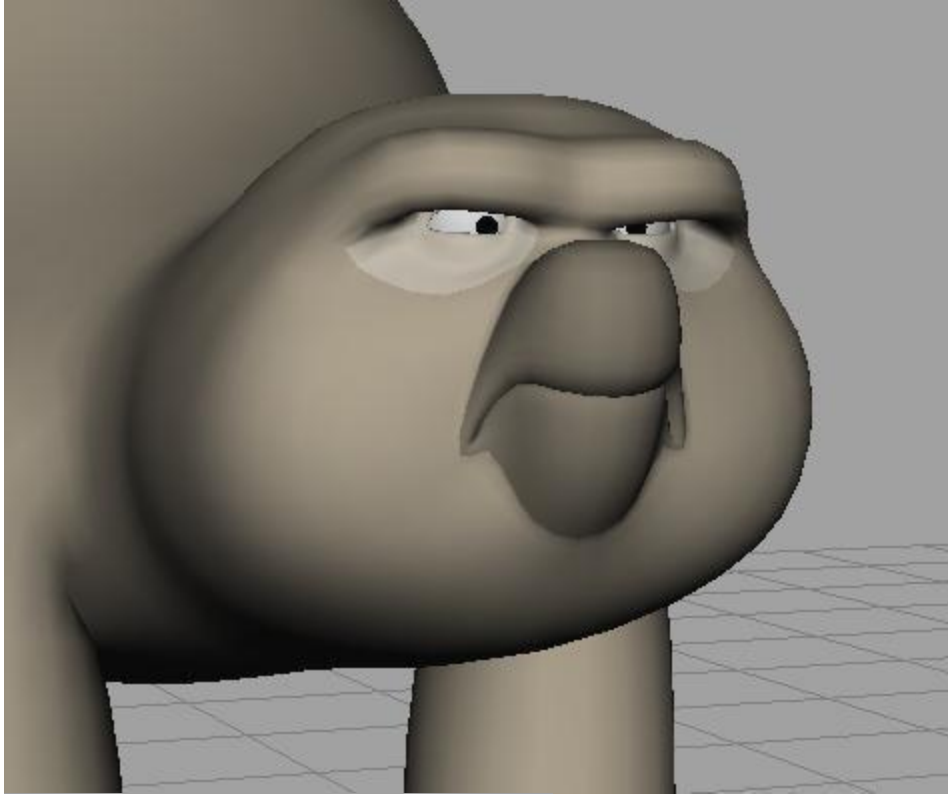


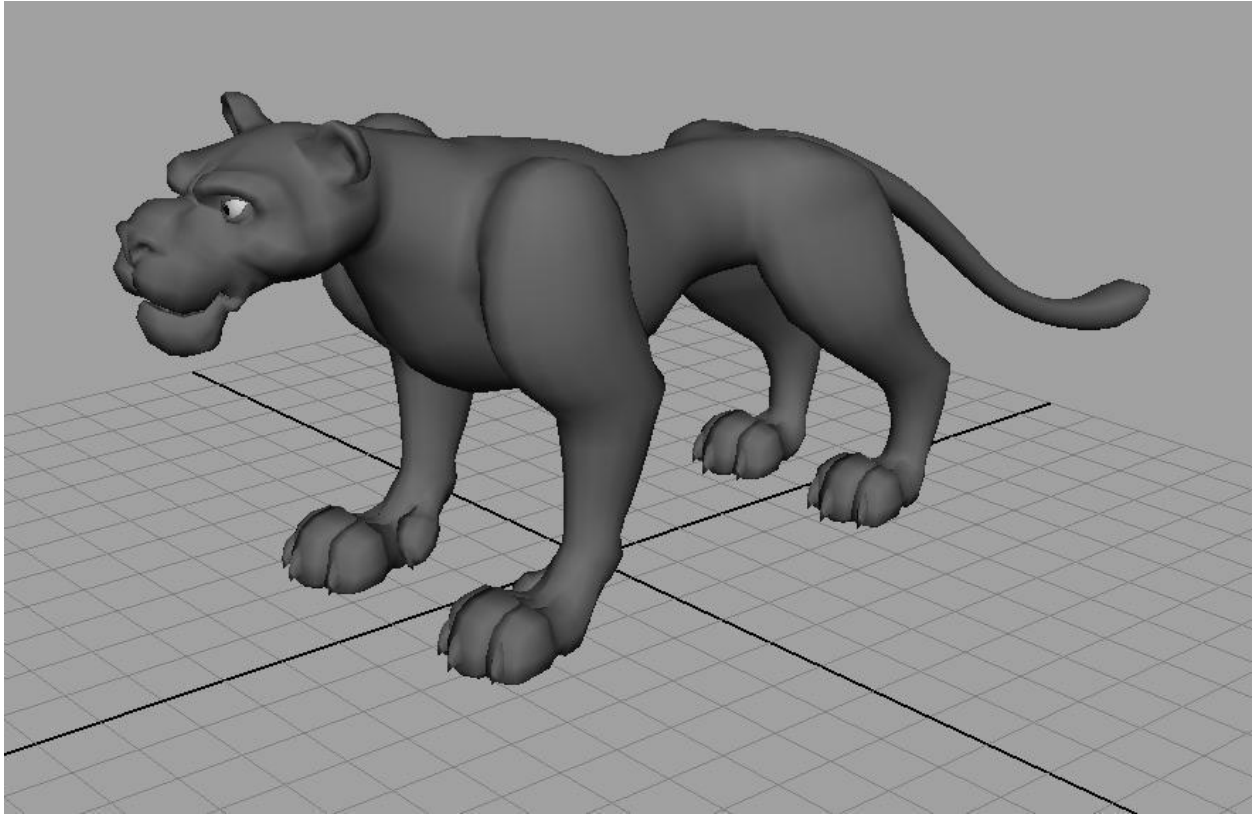
CHAR DESIGN











SETS:

